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Editor - Captain L. B. Marshall, MC, USN (RET)

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Notice

Due to the critical shortage of medical officers, the Chief, Bureau of Medicine and Surgery, has recommended, and the Chief of Naval Personnel has concurred, that Reserve medical officers now on active duty who desire to submit requests for extension of their active duty for a period of three months or more will be given favorable consideration.

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Residency Training in the Navy

The results of previous notices concerning residency training have been most gratifying. However, applications are still desired from Regular officers and those Reserve officers who have completed their obligated service under the Universal Military Training and Service Act, as amended, in the following specialties: Internal Medicine, Radiology, Pathology, Pediatrics (opening in Pediatrics at Chelsea, Oakland, and Philadelphia), Urology, and Otolaryngology (Philadelphia only).

It is now the desire of the Bureau of Medicine and Surgery to continue a resident in training without interruption until he has completed the formal training requirements leading to certification by an American Specialty Board. This procedure will be strictly adhered to in every case where the needs of the Service permit and providing the officer shows satisfactory progress as a resident. (ProfDiv, BuMed)

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"Commendation"

On 12 May 1955, Indo China President Ngo Dinh Diem awarded the medal "Officer de l'Ordre National de Vietnam" to Navy LTJG Thomas A. Dooley, MC, for his outstanding work in refugee camps in Northern Vietnam at the Presidential Palace in Saigon.

President Diem, in making the award, said; "It is an honor and a pleasure to speak in behalf of my people and to award you the medal 'Officer de l'Ordre National de Vietnam' in recognition of your outstanding work in refugee camps in Northern Vietnam. You are loved by my people and in the resettlement areas here in Saigon the name 'Bac Sy My' (Vietnamese for American doctor) Dooley is well known. You were the first American the people of the Tonkin rice fields came in contact with and by knowing you and loving you they grew to understand the American people. Your knowledge and your medicine has saved many of their lives and brought comfort to their suffering, but more than this, it has shown them the true goodness and the spirit of help and cooperation that America is showing not only in Vietnam but in all the countries of the world who seek and strive to achieve and maintain their freedom."

Early in September 1954, an additional medical officer was needed in the Navy's Preventive Medicine and Sanitation Unit at the refugee camp and embarkation sites in Haiphong. Dr. Dooley, then serving as medical officer of the USS Montague (AKA-98), volunteered for this duty and became a medical member of this unit on 13 September 1954. He was made Officer in Charge of the unit on 24 October 1954, and continued as such until the completion of operation "Passage to Freedom" on 19 May.

Dr. Dooley was one of the few Americans who served in Indo China throughout the entire period of the Navy's evacuation, called "Passage to Freedom." The operation carried a total of 310,848 people and involved more than 100 naval ships and commands. It began in August of 1954, and ended when the "Bamboo Curtain" descended and the Viet Minh Communist forces of Ho Chi Minh occupied Haiphong and the rich Tonkin delta.

Dr. Dooley is a graduate of Notre Dame and St. Louis University Medical School. He is the son of Mrs. Agnes Dooley of 4402 McPherson St., St. Louis, Missouri.

(See News Letter, Vol. 24, No. 7, dated 15 October 1955)

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Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14 Me., giving full name, rank, corps, and old and new addresses.

The Management of Multiple Injuries

With progressive mechanization and the striving for higher speeds in the modern world, the incidence of simultaneous, severe, multiple injuries in the same patient is steadily increasing. In such cases, all the difficulties of management of a single regional trauma may be multiplied infinitely so as to create a complex surgical problem. Not only are the general, nonspecific effects of trauma on the body as a whole more profound and devastating than in the case of one specific injury, but these may develop insidiously and be masked by obvious regional injuries. Even when the patient with multiple injuries has been thoroughly evaluated and the manifold problem considered in its entirety, questions of priority in treatment arise. Severe trauma is not selective of a body region or of a particular tissue but, indiscriminately, may batter head, neck, trunk, and extremities. It does not respect anatomical divisions or systems but mangles together skeletal tissues, soft tissues, and viscera with equal indifference. The surgeon who deals with trauma may thus be urgently confronted with the problems of any or all of the surgical specialties, as well as with the problems of general surgery.

In the emergency care of victims of multiple injuries, the primary consideration is to save life. This demands immediate attention to hemorrhage, to shock, and to the airway. Next, a tentative evaluation of the extent and type of injuries should be made, and fractures should be splinted before the patient is moved. The younger men should be taught the importance of getting these patients to bed as soon as possible for further urgent care and evaluation. Definitive treatment of specific injuries can usually be deferred until some plan of priority is established. Complete, accurate evaluation of the injuries may require close, repeated, or prolonged observation.

Any severe trauma, whether single or multiple, threatens life in several ways, either immediately or after the emergency appears to be past. In the case of multiple injuries, the threat is usually greater and yet it may not be so obvious as in the case of a single, apparent trauma.

The nonspecific causes of death, or the general problems are: shock, hemorrhage, infection, pre-existing disease, such as cardiovascular-renal complications, and respiratory complications. The value of blood, plasma, blood substitutes, and fluids, has been amply demonstrated, and their general use has reduced the relative importance of shock and hemorrhage as a cause of death following trauma. With regard to infection as a cause of death, its relative importance has also been spectacularly reduced through the judicious use of chemotherapeutic agents and antibiotics in conjunction with better surgical technique. With the reduction of mortality from shock, hemorrhage, and infection that has already been achieved, the relative importance of respiratory complications as a cause of death has increased.

The development of respiratory complications following multiple injuries is often insidious and their seriousness may not be appreciated until too late.

Because the serious common denominator of respiratory complications is anoxia, the management of these complications is concerned with its effective prevention or correction. The obvious modality for the treatment of anoxia is the administration of oxygen, but oxygen therapy may be completely ineffective or inadequate because of the nature of the pathological condition causing the anoxia. The pathological conditions associated with multiple injuries that may make oxygen therapy ineffective may be grouped in two categories: mechanical obstruction of the airway, and reduced tidal air or vital capacity.

Because of the importance of adequate respiratory function for survival from the effects of trauma, the author discusses briefly a few specific conditions commonly associated with multiple injuries that cause reduction in the vital capacity and tidal air.

Abdominal distention is very common, either from direct abdominal injury or from more remote injury to the vertebrae or ribs. The differential diagnosis between intra-abdominal injury and an ileus due to remote injury may be quite difficult, especially after distention is pronounced. The diagnosis will be made easier and unnecessary abdominal surgery may be avoided if routine examination of the abdomen is made at the onset and repeated.

The commonest injury to the chest wall associated with multiple injuries is rib fracture. Probably because rib fracture by itself is ordinarily not serious and because ambulatory treatment is often adequate, its seriousness in cases of multiple injuries is frequently overlooked. In conjunction with multiple injuries, rib fracture predisposes to, or aggravates, all of the respiratory complications referred to, and carries serious potentialities. Adhesive strapping of the chest as a form of treatment has been flatly condemned by some. The author's position is that strapping is often of value in the ambulatory case but should be used with caution, if at all, in the patient confined to bed with multiple injuries. Intercostal nerve block to control pain and permit full respiratory excursion is preferable. In the case of stove-in chest with paradoxical respiration, strapping is of no value. In these cases, it is necessary to apply traction to the affected rib segments or, as suggested by the Wesley Hospital group, to the skin overlying the loose chest wall by means of wires or pins.

Encroachment on the pleural space in cases of multiple injuries frequently occurs as a result of hemothorax or pneumothorax. Both of these conditions are serious and hold high priority for treatment in the patient with multiple injuries. It is generally agreed now that the blood should be aspirated, not only to relieve immediate respiratory embarrassment but also to obviate the necessity for a later decortication operation.

Repeated x-ray examinations are a valuable guide to the need for repeated thoracentesis.

Tension pneumothorax is a still more serious condition with an urgent priority. It is characterized by early, severe chest pain and shock with rapidly progressing respiratory embarrassment and the gradual development of subcutaneous emphysema. Because it will rapidly reduce effective respiration to a lethal level, it must be recognized at once. The emergency treatment is to insert a sterile needle with an open end finger cot or glove attached through the second interspace anteriorly. This will quickly act as a flutter valve and will take care of the emergency.

It is important to remember that contusion of the lung in some degree is usually associated with injuries to the chest wall. While the extent of the lung contusion is not easily evaluated and the contusion itself is not accessible to treatment, it is extremely important to eliminate all other remediable factors contributing to respiratory difficulty. Contusion may heal spontaneously under favorable conditions but under unfavorable conditions may lead to pneumonitis, which is best treated with antibiotics.

When injury to the head occurs with multiple injuries, it is most likely to become the primary problem and require priority in management even when it does not appear to be the most urgent condition at the onset. The author discusses head injuries in order to emphasize the importance of their careful evaluation in the patient with multiple injuries and to mention their high priority in management. Such patients do not well tolerate early extensive surgical procedures, so that definitive treatment of the other injuries may have to be delayed until the danger from the head injury is past.

Penetrating wounds of the abdomen in association with multiple body injuries are not common in civilian practice. When they do occur, early surgical exploration is mandatory as soon as the patient's general condition permits it. Non-penetrating abdominal injuries on the other hand are commonly associated with multiple injuries. The differential diagnosis and evaluation of non-penetrating abdominal injuries can be exceedingly difficult, and their management in the presence of other injuries demands fine judgment and often calls for serious deliberation. Early surgical exploration is advisable when there is evidence of rupture of the spleen, gastrointestinal tract, or urinary bladder. If there is evidence of continuing free intra-abdominal bleeding, exploration becomes necessary. For rupture of the kidney or liver, for injuries of the pancreas and for retroperitoneal hemorrhage, early treatment should be conservative. It should be borne in mind that signs of peritoneal irritation with perforation of the terminal colon or the small intestine may be mild immediately after injury because of the consistency or small quantity of the leakage.

Compound fractures deserve a high priority in the management of multiple injuries. If the patient's general condition does not permit definitive treatment of fractures, every effort should be made to debride and

close the wounds early, following which immobilization should be maintained until such a time as reduction can safely be carried out. If, because of other serious injuries, compound wounds cannot be closed within a few hours, delayed closure or open treatment may have to be carried out.

Definitive treatment of spine fractures can ordinarily be delayed, because the patient with other severe injuries is confined to bed. There is an exception, however, with evidence of cord injury. In this event, immediate laminectomy is indicated because it is impossible to determine clinically whether paralysis is due to physiological or anatomical interruption of nerve pathways.

Patients with severe multiple injuries almost invariably require continuing attention to fluid intake and urinary output, maintenance of nutrition, and control of anemia. For those who have been receiving medication, such as cortisone, ACTH, insulin, et cetera, prior to injury, the medical program must be continued or intensified.

A discussion of the management of multiple injuries requires mentioning the medico-legal aspects of the problem. Trauma is the most fertile field for litigation in all medicine, on the basis of public liability, compensation and malpractice actions. The surgeon treating trauma must accept the fact that every case is a potential source of future controversy and litigation. The medico-legal implications of multiple injuries are as manifold as the injuries themselves.

Because every case of trauma is potentially a multiple injury case, it is important to bear in mind the frequent association of certain conditions, such as compression fracture of the spine with fracture of the os calcis; rupture of the spleen with fracture of the left lower ribs; or urinary tract injury with fractured pelvis. In the case of fracture of one of the bones of the lower leg or forearm, it is important to rule out fracture or dislocation of the other bone at a different level. (Lindquist, J. L., *The Management of Multiple Injuries: Indust. Med.*, 24: 264-268, June 1955)

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Atrio-Septo-Pexy in Atrial Septal Defects

Atrial septal defect, one of the most common of all congenital cardiac malformations, has been the subject of intensive investigation in recent years. The impression that this lesion is perfectly benign with little consequence upon the cardiovascular system has been largely dispelled by hemodynamic studies of the lesion by right-heart catheterization. Although compatible with a relatively normal life span in some individuals, others may die early in infancy or childhood from congestive heart failure. Still others live to the third or fourth decade when they become disabled by progressive exertional dyspnea, fatigability, paroxysmal tachycardia, and congestive

heart failure. The mean duration of life for patients with such lesions has been set at the mid-thirties.

The purpose of this article is to present physiological and clinical data in a group of 15 patients in whom follow-up hemodynamic studies have been possible following closure of the atrial septal defect. In two patients with associated anomalous pulmonary venous drainage into the right atrium or superior vena cava, this has been accomplished by a modification of the original technique.

The hemodynamic data before and after surgery indicate that atrio-septo-pxy can effectively relieve the burden imposed upon the circulation by atrial septal defect. This lesion, in its uncomplicated form, physiologically represents an intracardiac arteriovenous shunt. That is, a defect in the atrial septum allows blood to flow from the left atrium to the right atrium with subsequent increase in the input load into the right ventricle. Consequently, there is an increase in work of this chamber as well as an increase in the quantity of blood flowing through the pulmonary bed.

Although several mechanisms have been invoked to explain the left-to-right shunt in atrial septal defects, it appears that the most important factors concern themselves with the pressure-volume relationships of the cardiac chambers.

The circulatory dynamics become altered in the presence of pulmonary vascular changes. Although the pulmonary arterial pressure may remain within normal limits in spite of marked increases in flow due to the vast capacity of the pulmonary bed, pulmonary hypertension is frequently observed.

In the majority of instances, particularly when the elevation in the pulmonary arterial pressure is marked, pulmonary vascular changes, resulting in an increased resistance to flow, are a major factor. That abnormally increased flows into a normal pulmonary bed may result in mild degrees of pulmonary hypertension, is suggested in some patients. Pulmonary hypertension may result from large flows into a pulmonary bed restricted in part by vascular changes.

Pulmonary vascular changes, the anatomic counterpart of the increased resistance to blood flowing through the pulmonary bed, observed physiologically, have been described in atrial septal defect. The developmental factors involved in these changes remain obscure. Obvious factors would appear to be (1) increased pulmonary blood flow, and (2) highly oxygenated blood flowing through the pulmonary vascular bed.

Characteristically, in atrial defect, the blood traversing the pulmonary bed has an abnormally high oxygen content. It is suggested that this is a factor in initiating the pulmonary vascular changes which are perpetuated by structural changes in the smaller pulmonary vessels consisting of medial hypertrophy and intimal fibrosis. A superimposed functional narrowing

cannot be eliminated. The development of pulmonary changes appears to be a response on the part of the individual in an attempt to reduce the left-to-right shunt, thus tending to equalize the flows in the two major circuits: the pulmonary and the systemic.

The resistance to flow of blood through the pulmonary bed is increased, and the pulmonary artery pressure rises. The latter may cause aggravation of the anatomic changes described with further increase in the resistance to blood flow. It is apparent that in some individuals this resistance may progress to a point where blood leaving the right atrium finds it easier to traverse the defect into the left atrium than to pass through the pulmonary circuit.

The mechanism for the alteration in the circulatory dynamics in the presence of pulmonary vascular changes is as follows: These changes, by virtue of increasing resistance to flow through the pulmonary circuit, result in right ventricular hypertension and increased work of this chamber. The right ventricle thus hypertrophies and its pressure-volume relationships change, becoming less distensible than formerly. It now offers more resistance to inflow of blood from the right atrium. Consequently, there is an increase in the residual blood in the right atrium at the end of rapid filling of the ventricle during diastole. According to Starling's law, this results in a more forceful contraction of the right atrium. This eventually leads to hypertrophy and, similarly, a change in the pressure-volume relationships of the right atrium. This is suggested by the more sweeping pressure changes occurring in this chamber during the cardiac cycle in these patients. Hence, the major factor responsible for the direction of flow of blood (left to right) through uncomplicated atrial defects, i. e., the relatively less distensibility of the right atrium, is altered. Accordingly, the left-to-right shunt is reduced. Progression in the hypertrophy of the right-heart chambers may result in reversal of the shunt with the appearance of peripheral arterial hypoxemia and cyanosis. Thus, it appears that cyanosis in atrial septal defect, uncomplicated by other cardiac malformations, may occur in the absence of right-heart failure. In the authors' experience, chronic cyanosis in atrial septal defect, uncomplicated by other lesions, has been associated with severe pulmonary hypertension with markedly increased pulmonary vascular resistance. The significance of the clinical changes following surgery is discussed. (Goldberg, H., and Downing, D. F., The Physiological and Clinical Changes Following Closure of Atrial Septal Defects by Atrio-Septo-Pexy: *Am. Heart J.*, 49: 862-878, June 1955)

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Radical Excision of Malignant Chest Wall Tumors

Primary or secondary malignant neoplasms occasionally involve the deep structures of the chest wall. Sarcomas of various types account for most of the primary lesions. Recurrences, following radical mastectomy for carcinoma of the breast, comprise the majority of secondary tumors, and direct extension from the lung is not infrequent. Treatment of these lesions, until recently, has been unsatisfactory and even today many surgeons are reluctant to undertake radical excision, and, not infrequently, rely upon palliative measures. Any attempt at surgical cure should consist of wide radical extirpation.

When resection of the bony chest wall is accomplished and the defect simply covered by soft tissue, instability is certain to occur. Extensive paradoxical motion, especially in the presence of a mobile mediastinum, can lead to serious complications in the immediate postoperative period. For this reason, many surgeons in the past have avoided surgery in this location or compromised the extent of excision required.

This article presents ten consecutive cases of chest wall malignancy treated by radical excision and prosthetic repair. Once the diagnosis of chest wall sarcoma or carcinoma has been established, curability of the lesion should be considered. A careful clinical and roentgenographic search for metastases is in order if one is dealing with a primary lesion, and detectable spread elsewhere must be ruled out in secondary tumors.

In this procedure, two layers of tantalum mesh are employed, and because fixation of mesh to moving bone may predispose to tearing, the material is allowed to overlap the edges of the defect about one inch and is tacked snugly to fascia with interrupted cotton sutures. It seems reasonable to assume that fascia exerts some cushioning effect when transmitting the stresses of chest wall motion. Stability obtained with this technique has been excellent. Stainless steel mesh, with which the authors have had no experience, is claimed to have even less tendency to fracture than tantalum and certainly seems deserving of further trial.

Once the mesh has been secured over the defect, it must be covered by soft tissue. Simple undermining of wound edges, sliding flaps, and pedicle flaps have all been used in different situations. When dealing with anterior chest wall defects, mobilization of the entire opposite breast and underlying pectoral muscle provides a large and convenient donor flap. This procedure is technically simple and has provided very satisfactory coverage each time it has been used. There has been no difficulty with wound healing in any of the authors' extensive resections. All, except one in which there was a partial breakdown of a sliding flap, have healed per primam, and in this instance, despite the fact that underlying mesh was exposed, granulation filled the area rapidly and the wound healed uneventfully.

The procedure should be limited to cases considered curable, and has not been recommended to any patient as a palliative measure. In those cases where cure was not achieved, however, worthwhile palliation was obtained for considerable periods of time.

Primary carcinoma of the lung which invades adjacent chest wall structures frequently arises in peripheral lung tissues. Hilar encroachment by these growths is less likely than with centrally located lesions, and hence, pneumonectomy or lobectomy is generally not technically difficult. Invasion, in the two cases discussed by the authors, was confined to bone and periosteum. Resection of chest wall was limited to rib and intercostal muscles. The overlying soft tissues were not disturbed, and local recurrence did not occur in either case. The chest wall resection adds little time to the procedure and none to the convalescence. In the absence of detectable metastases elsewhere, a reasonable salvage rate should be expected.

Fixation of breast cancer to chest wall has long been considered a sign of inoperability and because of the prevalently taught dogma, many of the cases were sent to the hospital for terminal disposition. The growths had been observed by the patients themselves on an average of 14 months before referral.

Surgery for these tumors has been criticized as mutilating, dangerous, and hopeless. Actually, with prosthetic repair, physical deformity is not marked, and there should be no functional incapacity. One preventable death in ten cases can hardly be used as an argument against the safety of the procedure. All wounds are closed tightly without drainage, and healing per primam has been the rule. One elderly, debilitated woman had a partial breakdown of a graft and a protracted hospital course. Most other patients left the hospital by the tenth postoperative day.

One patient is alive 7 years after resection of a large osteogenic sarcoma of the sternum; another 6 years after resection of an advanced epidermoid carcinoma of the lung invading the chest wall; and a third 4 years after excision of a recurrent breast carcinoma that had infiltrated the bony cage.

X-ray therapy rarely if ever leads to permanent cure of malignancies of the nature described above. The authors' experience with ten cases seems to indicate that any chest wall malignancy, which after careful study appears to be self-limited, should be given the benefit of the doubt and widely excised. (Beardsley, J. M., and Cavanagh, C. R., Radical Excision of Malignant Chest Wall Tumors: J. Thoracic Surg., 29: 582-596, June 1955)

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Localization of Ulcers

It is of considerable importance to the surgeon to possess knowledge before operation of the site, size, and nature of ulcers situated in the gastric antrum, the pyloric region, or the first part of the duodenum. This is particularly true when he plans to resect the ulcer and perform end-to-end anastomosis in order to insure complete removal of the ulcer and suture through healthy tissue.

These considerations apply to the limited operation of antroduodenectomy, or to the classical Billroth I operation where a greater portion of the stomach is resected. Even in the Polya operation where a gastrojejunostomy is performed, the surgeon should have an indication of the site of the ulcer or ulcers, because the distal incision may otherwise be made inadvertently through an ulcer which has not been accurately localized either before the operation by the radiologist or the gastroscopist, or during the operation by the "seeing eye" or the "palpating hand" of the surgeon. Involvement of an ulcer in the line of closure may lead to imperfect healing and subsequent "burst duodenal stump."

This article studied the accuracy of the preoperative radiologic and gastroscopic findings in a series of 50 patients in whom antroduodenectomy had been performed, by correlation with the pathologic findings in the resected specimens. The operation in all cases was carried out following a diagnosis of ulcer in this region.

The preoperative radiologic examination of these 50 cases gave some evidence of ulcer in all but 2. In the majority, deformity of the duodenum, pylorus, or antrum was reported; in 21, a niche was seen, but in only 14 did its reported site correspond exactly to the position of the ulcer subsequently found, the error being mostly due to difficulty encountered by the radiologist in localizing the pylorus. The two failures were the cases in which a pyloric ulcer niche was falsely reported, and the cases in which no abnormality was detected radiologically.

The demonstration by barium meal of a niche was shown to be good evidence of the presence of an ulcer. However, the demonstration of an ulcer niche did not have any relation to the actual size of the ulcer present. Both large and small ulcers were often demonstrated as deformities and not as niches. While it may seem surprising that large or giant ulcers were often seen only as deformities and not as craters, this difficulty has already been stressed in the literature.

Therefore, it appears that although deformity of the duodenal cap, pylorus, or antrum is not, per se, conclusive evidence of the presence of an ulcer, it may often be the only demonstrable radiologic finding. In this series it proved to be valuable evidence when considered in conjunction with the clinical signs and symptoms.

The difficulty of accurately localizing the pylorus, during barium meal examination for ulcer in the pyloric region, has been emphasized over the years. Findings in the present study confirm this difficulty. Because antral ulcers were, on occasions, reported as duodenal, and duodenal ulcers were reported as antral, it appears that even when great care is taken, accurate localization of the pylorus may be impossible due to the contraction of scar tissue near the ulcer simulating the pylorus. However, an awareness that such contraction may simulate the pylorus should lead to careful search for the true--albeit dilated--pylorus.

Similarly, the high incidence of multiple ulcers was an unexpected finding and calls for awareness by the radiologist, gastroscopist, and the surgeon. They should not be satisfied with the mere demonstration of one ulcer without first excluding the possibility of other ulcers.

The duodenal diverticula found in 8 cases were almost certainly due to the contraction of scar tissue around one or more ulcers. These diverticula did not in themselves produce any confusion, as in each case the radiologist reported "deformity of the duodenal cap."

The number of cases studied in this series, in which the ulcer was prepyloric in position, is insufficient for conclusions to be drawn on the likelihood of the ulcer being malignant.

The presence of an ulcer niche or significant deformity of the duodenal cap, pylorus, or antrum was sufficient to make a correct diagnosis of peptic ulcer in 48 of the 50 cases studied, when taken in conjunction with the clinical features of the case.

However, ulcer niches were seen in less than half of the patients in whom peptic ulcers were proved to be present. The exact localization of the ulcer site was often not possible on radiologic grounds, the chief difficulty being the location of the pylorus. Multiple ulcers were found in 17 cases, but were not diagnosed in any before resection.

The duodenal deformity, seen in the barium meal examination, may be due to contraction around one or more ulcers which has produced a secondary diverticulum. Antral ulcers may well be present in spite of negative gastroscopic findings. In the present series, the gastroscopist often failed to discover them. (Davis, P. H., Finckh, E. S., and Wood, I. J., The Localization of Duodenal and Prepyloric Ulcers: Gastroenterology, 28: 736-743, May 1955)

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Lipoid Pneumonia

Aspiration of certain oils into the bronchial tree is known to cause an inflammatory reaction. Earlier reports called attention to this condition in children following the use of oily nosedrops or aspiration of cod liver oil,

cream, or other fats, in recent years there has been an increasing number of reports of cases among adults.

Various oils cause different reactions in the lung. Vegetable oils, such as poppy seed and sesame oil which are commonly used in bronchography, produce little reaction in the lung. Fish and animal oils produce an acute hemorrhagic or necrotizing reaction. Mineral oil produces a mild foreign body type of reaction. Mineral oil does not stimulate the cough reflex when it enters the tracheobronchial passages. The pulmonary reaction varies according to the amount of oil and the duration of the process. The dependent portions of the lungs are most commonly involved; that is, the bases in ambulatory patients and the posterior portions in bed patients. The right side is more often involved than the left. The process frequently simulates bronchopneumonia. On gross examination, the involved area may be a yellow or brown color, and oil may be expressed by pressure or scraping with a knife. On microscopic examination, the alveolar walls and interstitial tissues show edema and cellular infiltration including large mononuclear cells containing oil droplets. Later, the appearance is that of chronic interstitial pneumonia. Following this, there is pulmonary fibrosis and possibly atelectasis and bronchiectasis. There may be circumscribed lesions, sometimes called paraffinomas, which may resemble neoplasms, cysts, or abscesses.

The roentgenographic changes are not specific for this condition and are usually described as bronchopneumonia, hilar clouding, increased bronchial markings, lobar pneumonia, or tumor.

Each of the seven patients presented had some serious illness other than lipid pneumonia which was primarily responsible for death. However, in three cases, the pathologist listed lipid pneumonia as the immediate cause of death. In one case, lipid pneumonia was considered to be an important contributory cause of death. In three cases, lipid pneumonia was present as an incidental but a definite finding. All of the patients had used mineral oil regularly as a laxative. One case had also used it to lubricate the bougie used to dilate his esophageal stricture.

Lipoid pneumonia occurs in all age groups from infancy to senility. Schneider reported several cases of oil pneumonitis in apparently healthy adults and pointed out the difficulty in diagnosis because of the benign early phase of this condition.

In suspected cases of lipid pneumonia, it is advisable to have the patient on a fat free diet for three days before collecting sputum specimens. This helps avoid oral contamination of the specimen. Fresh unstained sputum may reveal oil droplets or, when stained with Sudan stains, the sputum may reveal phagocytic cells containing oil. It has been reported that a bedside test may be made by bringing the sputum in contact with light tissue paper and looking for oil droplets clinging to the paper. Needle

aspiration of the lung may reveal oil or oil-containing tissue. Some caution must be exercised in making the diagnosis of lipoid pneumonia from the presence of fat in the sputum. Fat from food particles may contaminate the sputum. It has also been shown that microscopic fat is present in the sputum of normal people and in tuberculous patients. This fat is predominantly imbedded in the mucin.

Awareness of lipoid pneumonia in the differential diagnosis of tumor-like roentgenographic shadows in the chest may prevent an unnecessary thoracotomy. This is especially true at the present time when more routine chest roentgenograms are being taken and when more radical surgical procedures are attempted in undiagnosed pulmonary lesions.

The examiner's index of suspicion should be raised when an obscure pulmonary disorder is associated with any of the conditions described, and the patient should be questioned specifically regarding the use of mineral oil.

Proudfit, et al., recently reported a case of chronic lipoid pneumonia following the prolonged inhalation of mineral oil spray used in the man's occupation.

In addition to the pulmonary hazards, it is recognized that excessive use of mineral oil decreases the absorption of carotene and vitamin A. This is true not only in its medicinal use but also in foods and cooking. (Meyers, J. B., Griffith, R. L., Lipoid Pneumonia Due to Prolonged Ingestion of Mineral Oil: *Dis. Chest*, XXVII: 677-683, June 1955)

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A Study of Methods for the Prediction of Plasma Volume

Because of the wide variation in plasma volume of healthy individuals, there are no satisfactory normal values or standards of reference. For this reason, the clinical application of plasma volume determination in disease states has been somewhat limited. This is especially true whenever significant small changes in plasma volume have been sought. It was felt that a contributing factor to the wide range of normal values might be the variation in vascularity of various body tissues, most notably the difference between fat and muscle tissue. If this source of variation in relating total volume to physical measurement could be standardized, a more accurate calculation of expected plasma volume might be available for individual cases, and would, therefore, permit better evaluation of small variations in plasma or blood volume.

A second source of error in the interpretation of plasma or blood volume has been emphasized by Funkhouser and Pritchard. There is a mathematical inaccuracy in establishing a direct ratio of body measurement to plasma or blood volume. They pointed out that, unless the

regression line relating volume to body size passes through the origin, it is mathematically incorrect to assume a direct ratio between volume and linear measurement. The purpose of this report was to determine the difference of two plasma volume determinations performed in the same person at a two-week interval, and to re-examine the possibility of selecting a common denominator to which plasma volume could be related.

Others have shown what is confirmed in this study, that both the Evans blue dye and the I^{131} serum albumin tags give comparable values of plasma volume. The great advantage of using I^{131} -tagged albumin is its ease of handling for injection and blood determination if a scintillation counter can be employed. The capacity of a scintillation counter to measure the gamma radiation of I^{131} permits repeated injections of small amounts of the isotope without the complications inherent in the repeated injection of Evans blue dye. This method of counting whole blood avoids the error produced by trapped plasma in the determination of hematocrit, which has been variously estimated at between 2% and 8%. It does not avoid the problem of small and large vessel hematocrit differences, which can be resolved only by independently tagging both the cellular and liquid components of whole blood.

Because a significant variation in plasma volume, performed on the same individual, exists between the two separate determinations with a standard deviation of 156 ml. in this series, it would seem unreasonable to expect to reduce this variability among a group of individuals to less than this even if an ideal method for the relation of plasma volume to body size existed.

The writer emphasized that an attempt to relate plasma volume directly to surface area, height, or weight by a simple ratio is mathematically incorrect unless the line of regression constructed from this relationship passes through the origin. These data and calculations of others show a linear relationship which passes above the origin, indicating different ratios for different body builds. It is more accurate, therefore, to describe the slope of the line of regression as a formula for predicting plasma volume, e. g., plasma volume = 500 ml. \div 30 ml. \times wt. in kg., rather than the ratio, plasma volume = 40 ml. \times wt. in kg.

By establishing lines of regression for various body measurements such as lean body mass, body weight, body water as measured by anti-pyrine, height, and surface area, it was possible to determine the standard deviation of the points from that particular line and thus to determine what measurement offered the smallest variation. It was anticipated that plasma volume would relate most accurately to lean body mass inasmuch as fat tissue is less vascular than muscle and other tissues.

Plasma volumes of two different groups of subjects were studied by similar techniques using both Evans blue dye and iodinated human serum albumin. In Group I, plasma volume estimations by two techniques were

carried out on 13 subjects on two occasions at two-week intervals. The standard deviation in the same individual on these occasions was 156 ml. for Evans blue dye and 289 ml. for iodinated human serum albumin.

In Group II, plasma volume determinations were performed on 50 normal subjects of both sexes and many body types at a single period under basal conditions. The isotope tags were assayed on both wet and dry plasma samples and from whole blood using a scintillation counter. Lean body mass and total body water were determined by body specific gravity and antipyrine methods.

From the accumulated data, the close agreement of the two methods for estimating plasma volume was confirmed. The mean value for I^{131} human serum albumin (counted dry) was 41.2 ml. per kilogram with a standard deviation of 5.5 ml., and that for Evans blue dye, 40.7 ml. per kilogram with a standard deviation of 4.4 ml.

Wet counting of samples gave a slightly smaller value--39.7 ml. per kilogram, standard deviation 5.3 ml.--than the dry-counting method. Counting whole blood with a scintillation counter produced a value of 73.3 ml. with a standard deviation of 8.8 ml. compared to 71.4 ml. with a standard deviation of 7.3 ml. when hematocrit and Evans blue dye plasma volumes were used.

Values for lean body mass done by antipyrine and specific gravity methods showed an average deviation of 3 kilograms. The smallest standard deviation from the line of regression occurred when plasma volume was plotted against weight or surface area. It appears from this study, that these two denominators offer the best method for evaluating or predicting plasma volume. The slope for the line of regression for Evans blue dye related to surface area was: plasma volume = 1770 ml. x surface area M_2 - 460 ml. The value for body weight was: plasma volume = 668 ml. / 30 ml. x wt in kilograms. (Scott, R.I., Brooks, L., Krieger, H., A Study of Methods for the Prediction of Plasma Volume: J. Lab. & Clin. Med., 45: 841-849, June 1955)

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Penicillin Content of Poliomyelitis Vaccine (Salk) and Its Administration to Allergic Patients

Intense interest in the new poliomyelitis vaccine Types 1, 2, and 3 (Salk) has occasioned some question of its safety for administration to allergic children. Because of its content of residues of monkey kidney, the medium upon which the virus is grown, some have asked whether it can be safely injected into persons allergic to other animal proteins. The addition of 200 units of penicillin to each milliliter of culture medium has

also aroused concern lest the vaccine cause reactions in those already allergic to penicillin. Although the vaccine has already been given to many children apparently without inducing a serious allergic reaction, the present report is made with the purpose of clarifying these points at issue.

Control observations were carried out in 63 unselected adult ward patients, in each of whom intracutaneous tests with the undiluted vaccine were made for the immediate reaction just as in the allergic test subjects. In 58 patients, intracutaneous tests for a delayed 24-48 hour reaction were also made with 0.1 ml. of the vaccine.

Sixteen adult patients with allergic rhinitis and asthma due to multiple pollen, inhalant, and food sensitivity, and with strongly positive skin test reactions to animal danders, were tested with poliomyelitis vaccine. Intracutaneous tests and trial subcutaneous injections of the undiluted vaccine did not demonstrate evidence of cross-sensitivity.

Intracutaneous and trial subcutaneous tests with poliomyelitis vaccine in a patient with persistent penicillin sensitivity did not elicit any reaction attributable to its possible penicillin content. Tests in passive transfer sites with the serum of a patient, anaphylactically sensitive to penicillin and known to contain a high titer of reagins, were also negative, indicating that the penicillin content of poliomyelitis vaccine is negligible. The vaccine should offer no hazard either to persons allergic to penicillin or as a source of newly acquired penicillin sensitization.

Among 63 consecutive control adult subjects, intracutaneous tests with poliomyelitis vaccine showed negative immediate reactions. Of 58 adults, only three showed a definite, although slight, positive, delayed 24-hour skin reaction to 0.1 ml. of the vaccine. (Siegal, S., The Penicillin Content of Poliomyelitis Vaccine--Salk--and Its Administration to Allergic Patients: Am. J. Pub. Health, 45: 791-792, June 1955)

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Nutrition at the Shopping Center

The nutritional quality of diets in this country has improved steadily since World War II. Yet there are further opportunities ahead. Just because the average man in the United States today obtains enough food to prevent serious deficiency disease, does not mean that he is obtaining enough food of the right kind to give him optimum health, to help his children grow at their best rates, to prevent chronic disease, to protect him against the added stress of a severe illness, or to give him the extra stamina needed to produce to capacity in today's intensely competitive world.

Although serious widespread deficiency disease does not now exist, attention is called to a form of malnutrition that affects at least a quarter

of the population--obesity. Health officers and physicians are waging a ceaseless war against this condition.

Sellers of food, also, have a very real interest in this form of malnutrition as well as all other forms--not only a humanitarian interest but a business interest. The fat man is fat because he eats too much; the remedy is to get him to reduce his calorie intake until he uses up his own excess fat. Is it better business to sell him 3500 calories as 2 pounds of sugar, or to reduce his calories to 2700 by selling him 2 pounds of sirloin steak? Or to look at the problem from another angle: If he is seriously overweight, he may die as much as 10 years earlier than he would if he were of normal weight.

One of the greatest needs today is better nutrition education. In a survey by General Mills, covering nearly 60,000 children in 38 states, it was found that diets tend to become poorer as children grow older; that 52% of high school girls' diets were poor; that the diets of boys were notably deficient in fruits and vegetables; that the adequacy of the child's diet relates closely to the occupation and economic status of the parent; and that adolescent girls drink far too little milk in the belief that it is fattening.

In a study by the agricultural experiment stations of 6 northeastern states, conducted in 1952, the diets of pregnant women, industrial workers, and students from kindergarten through colleges were judged by the same standards. The most common and serious deficiency was vitamin C; deficiencies in calcium and vitamin A also occurred frequently. In a 5-year Iowa state-wide project by Dr. Eppright of Iowa State College, a deficiency of calcium and vitamin C was found. Most conspicuous for poor diets were the teen-age girls--a situation cited as particularly alarming because of its potential effects on the next generation. In New York State, Trulson examined 3-day diet records of 10,000 children, half of them in the fourth and half in the tenth grade. He found the poorest food practices among the older girls.

Another group suspected of prevalent nutritional inadequacy is the older population, people over 65--a group which has increased twice as fast as the total population since 1900. Nutrition science, using new biochemical approaches, offers much promise against the diseases of the later years. In the aged, poor diets may result from psychological, social, or mechanical difficulties.

Nutrition education is the essential link between professional knowledge and the improvement of food practices. It seeks to establish public understanding of, and demand for, a food supply adequate for optimum health, a balanced consumption of nutrients, taking into account a wide range of incomes. The physician, the nutritionist, the health officer, the scientist, and the teacher are struggling with limited resources and limited opportunity to teach good nutrition to the individual.

The housewife learns from these sources that good nutrition can help make her pregnancy successful, her baby healthy, and its growth good--that health, vitality, and long life are usually not attainable without good nutrition. It is usually her responsibility to buy the food for her family. Where does she make this final day-to-day decision? Frequently in the food store and the market. What guidance does she get at the point of sale to help make her purchases fit with what she has been taught? None. What help does she get to satisfy her that she is carrying out her responsibility? None. She is faced with a new set of values as she walks through the market deciding what she will buy--a comparison of prices, sizes, weights, and quality, beautifully, colorfully, and effectively portrayed according to modern sales techniques--but she receives no guidance whatever.

Most food sellers would know what foods to tell families to buy in the store to combat deficiencies but they are missing a great opportunity for using that knowledge.

Many millions of dollars go every year into the pockets of food faddists with special food items to sell--items that may range from dried seaweed to blackstrap molasses supposed to possess extraordinary food values of some kind. The success of the food faddist in recent years is an indication of partial failure in sound nutrition education for the general public. The food faddist's methods are insidious yet effective. As a lecturer, a pamphleteer, a propagandist, he sells the story that the American diet is deficient, that many common foods are harmful or dangerous, that malnutrition is widespread, that most people suffer some ailment as a result, and that they must radically change their diets in order to regain health and to avoid disease in the future--and, of course, they must use plenty of his special food items.

If people could be educated in the fundamentals of good nutrition, they could be led to spend their money on good food in the market, and on proper dietary supplements that would do them the most good. Many outlets are now being used to good purpose but there is failure to use one of the best avenues for putting the message across where it really counts--where food is displayed and sold.

There will never be a really successful program until the food sellers and the food industries cooperate with the scientists, nutritionists, and teachers in developing a positive, aggressive, coordinated program to present basic nutrition facts clearly and simply to the American housewife so that she can use those facts at the point of sale for the best nutrition for her family. (Sebrell, W. H. Jr., Nutrition at the Shopping Center: Pub. Health Rep., 70: 561-563, June 1955)

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Claustrophobic Reactions to Some Stresses
of the Submarine Service

The environment aboard a submarine is definitely and admittedly unusual. It presents unique stresses on the men who serve in this branch of the Service. There is the problem of constant crowding during work, recreation, and sleep. In the average submarine, eighty or more officers and men are crowded into what is essentially a metal tube, together with propulsion machinery, communication, detection, navigational, and fire control equipment, in addition to a supply of torpedoes (or mines, as the choice of weapons may be). The bulkheads are covered with dials, valves, and switches; the overhead with pipes, ducts, and cables. All spaces serve multiple purposes. Submarine operations are such that, when submerged, officers and crew are exposed to an environment wherein air is recirculated through the vessel with resulting buildup of carbon dioxide level and gradual lowering of oxygen percentage; and where there are high effective temperatures in operating compartments, and much dissemination of mixed odors from cooking, fuel oil, and wastes. All of this, and monotony and lack of privacy are encountered by submarine personnel on patrol.

Because the environment makes unusual demands, candidates for submarine duty must be carefully assessed and selected. One of the most important pieces of information concerning any candidate for submarine duty is a reasonably accurate prediction as to how the man will react under the stresses inherent in this type of duty.

The purpose of the study was to ascertain whether any screening method--any single test or group of psychological or psychiatric tests--might detect those individuals with sub-clinical claustrophobic tendencies until or unless a particularly stressful situation had provoked symptoms, or until the individual realized his difficulty and sought medical assistance.

The report concludes that it is not likely that individuals with sub-clinical claustrophobic tendencies can be detected until a stressful situation has provoked symptoms or until the individual voluntarily seeks psychiatric help. (Project NM 003 041.53.03. Medical Research Laboratory, USN Submarine Base, New London, Conn.)

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Armed Forces Institute of Pathology

The dedication of the new building of the Armed Forces Institute of Pathology in May marked a milestone for pathology. The President of the United States delivered the dedicatory address. The move to the new building on the grounds of the Walter Reed Army Medical Center opens greater possibilities of service to the Armed Forces, the Veterans Administration, the Atomic Energy Commission, the Public Health Service, and

civilian medicine. The scope of the present organization has been shaped largely by the counsel of the Scientific Advisory Board of Consultants in accord with their concept of the place of pathology in military medicine. Its development owes much to the support of civilian pathologists through one of its main departments, the American Registry of Pathology, which functions under the guidance of the National Research Council. A charter, published last year, authorizes operation of the Institute through a Board of Governors composed of the Surgeons General of the Army, the Navy, and the Air Force, and establishes the Surgeon General of the Army as the management officer.

The opening of the new building permits implementation of the policies outlined by these advisory and governing groups. For the first time, a comprehensive program of pathology can be formulated and carried through. The step from the inflexible, overcrowded rooms of the old Army Medical Museum to modern laboratories adapted to the practice of progressive pathology is an important one. Comprehensive work on problems in military medicine has been impossible in a building where laboratory animals for diagnosis or research could not be kept, where chemical laboratories endangered the priceless collection of the Armed Forces Medical Library, and where control of microbiologic activity was not feasible. Excellent facilities for handling animals are provided in the new building. A clearer understanding of disease processes and a more rational approach to therapy can be gained through animal experimentation. Laboratories serving ancillary disciplines have been provided to bridge the gaps that have existed in the procedures that make up modern practice. As a consequence of these advances, the military service can obtain consultation in pathology based on the most advanced methodology.

Consultation has always been regarded as the base line of the triangle that represents the three-fold mission of the AFIP, with research as one side and education or teaching as the other. In the past, recommendations of staff members were far in advance of the physical capabilities of the building. The equipment and facilities of the new Institute make possible the realization of these recommendations in a balanced approach to a program built on this philosophy. Dating back to the days of the Army Medical Museum and persisting to the present is the broad concept held by the staff that pathology is concerned with the nature of disease in its many aspects. As medical practice is incomplete without pathology, so is pathology incomplete without research and teaching. Research without experimentation is incomplete. This applies particularly to research for the individual patient and not just to program and project research. Time was when the quest for the best antibiotic regime for a patient was in the realm of research; now it is a matter of routine laboratory practice. Research in a similar vein but primarily concerning tissues has lagged in military institutions. Methods of using animal tissue cells to get quick

and specific answers are in immediate prospect. Methods employing human cells in both chemical and mammalian media are at hand and are being improved at a remarkably fast pace. The AFIP hopes to help, not only in developing such methodology, but also in establishing it as a routine technic of laboratories of pathology.

The change in physical environment from the old museum building to the new laboratory building comes at a remarkable period in the progress of medicine. Environment has played a significant role in disease, but until recently, it has been relatively unrecognized. As more and more problems of environment are investigated, its importance is better understood. Geographic pathology is an established field. Barometric pathology is on the verge of an expansion so tremendous that its field is almost totally new. Diseases influenced, if not produced, by environment are numerous and overwhelmingly important. Perhaps man's foremost killers can better be conquered by a major change in research strategy, a shift from a campaign against infectious agents to a campaign against adverse environmental influence. The dedicatory scientific program, "Pathology in Relation to Environmental Disease," emphasized the direction of future thought. This does not imply that the activities of the Institute will suddenly change. The diagnostic consultation service to the pathologist will remain its chief concern, but this service will be enriched by the use of supportive laboratory procedures hitherto not available. (Brig. Gen. Elbert DeCoursey, MC USA, Director, AFIP: Am. J. Clin. Path., 25: 554-555, May 1955)

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Statement on Plasma Volume Expanders

(Approved by Subcommittee on Shock on 20 April 1955 and
by Committee on Medicine and Surgery on 16 May 1955)

The following re-evaluation of the status of plasma volume expanders is approved by the Division of Medical Sciences, National Academy of Sciences, National Research Council.

The National Research Council Subcommittee on Shock, meeting on 20 April 1955, reaffirmed its previous recommendation that dextran of present specifications, as designated in the Military Medical Purchase Description, 18 March 1954, appears to be the most useful plasma volume expander, other than blood derivatives, available at the present time. Its use is recommended when whole blood, safe plasma, or albumin are not available. It is effective in producing an increase in plasma volume in patients with hypovolemic shock. Allergic reactions are infrequent and rarely severe. Most of the dextran infused is excreted or metabolized in a relatively short period of time.

This recommendation is reaffirmed in spite of the realization, based on studies carried out in the past two years, that the administration of large quantities of dextran can lead to a prolongation of bleeding time. The clinical significance of this defect in hemostasis is not known. Apparently it is only very rarely associated with abnormal bleeding of clinical importance. The mechanism by which administration of dextran prolongs the bleeding time is still not entirely clear.

On the basis of the present evidence, it appears safe to administer the usual dose of dextran (1000 ml.) in the treatment of traumatic and hemorrhagic shock. Extensive experience at this dosage level has not resulted in any known clinical difficulty due to abnormal bleeding. The risk in using amounts above this level has not been fully evaluated. Dextran should not be administered to patients with a disease involving an abnormal mechanism of hemostasis.

The Subcommittee on Shock at this time finds no reason to alter its previous recommendations concerning polyvinylpyrrolidone and gelatin preparations.

In the opinion of the Subcommittee, an ideal plasma volume expander has not yet been developed, and continued encouragement should be given to the search for new and better expanders.

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"Honors"

The Surgeon General has commended LT A. J. Prange, Jr., MC USNR (Inactive), 84 Hayes Road, Chapel Hill, N. C. for an article entitled "Some Facets of Shipboard Medicine," published in the U. S. Armed Forces Medical Journal of May 1955. The commendation read:

"Subject article is one of the finest I have read on the subject of Navy doctors and shipboard duty. Based on your sixteen months' experience as Medical Officer of the USS Briareus, you have presented an outstanding analysis of the special opportunities and responsibilities involved in medical care on board a small ship. Even more important, you have displayed in your article a spirit and attitude well worthy of emulation throughout the Medical Department of the Navy.

Because of the excellence of your article and the clear picture it gives of shipboard medical practice, we plan this year to present a copy to each new special and regular registrant upon being commissioned. Please accept my personal thanks and the Navy's traditional commendation 'Well done.' This has been made a part of your official record, with a copy retained in your jacket."

(Reprints of this article are available on request to the Bureau.)



MEDICAL RESERVE SECTION

"Package" Curricula for Naval Reserve Medical Companies

The National Naval Reserve Policy Board of 1954, convened by the Secretary of the Navy in accordance with the Armed Forces Reserve Act, recommended "that sponsoring bureaus for specialized (non-pay) units prepare training curricula for issue to their units; that a minimum number of 'packages' to serve fifty percent of authorized drills be prepared." The Secretary of the Navy approved this recommendation of the board with the understanding that such training curricula "packages" would be designed to meet the needs of the Medical Program.

Accordingly, "package" curricula for Naval Reserve medical companies have been prepared and are now being distributed to such units throughout the United States.

Integrated and packaged into compact form requiring little storage space, this curriculum was developed jointly by the Naval Medical School and the Bureau of Medicine and Surgery. It features instruction in atomic medicine, physical standards and examinations, the Reserve Forces and the Defense Department, and will be a part of the many training opportunities afforded the inactive Medical Department Reservist during fiscal year 1956.

Since the subjects for instruction are offered as a guide for twelve of the unit's twenty-four regularly scheduled drills during a fiscal year, considerable flexibility is afforded in the use of this training medium and a program of local choice.

In addition to affording a detailed outline of the study subjects to be presented, the curriculum furnishes four textbooks (two by authors Sears and Behrens); twelve lecture pamphlets; Chapter 15 Manual of the Medical Department; Army Regulation 40-115; a list of additional reference textbooks which may be obtained at any good local medical library; a list of appropriate training film available at all District Film Libraries (two films to be procured from a civilian source) and suggestions to instructors for an effective presentation of the subjects assigned.

The curriculum has been designed to permit two or more members of a medical company to prepare lecture subjects well in advance of the scheduled drills. Also specially qualified individuals outside of the membership of the unit may be utilized as instructors whenever and wherever possible.

BuMed Notice 1550 of 6 June announces and forwards this curriculum to Commandants of all Naval Districts for ultimate distribution to commanding officers of medical companies throughout the United States.

Considered to be the first step in prepared programs for non-pay medical companies, plans are now under way to develop next year's curriculum featuring preventive medicine subjects.

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Clinical Clerkship Training Program Begins

The Chief of Naval Personnel has recently authorized commandants of all continental naval districts to issue orders for special active duty with pay up to and including sixty days to Ensigns, 1995 (Medical) who are selected for the Naval Clinical Clerkship Training Program beginning 1 July 1955, and continuing throughout fiscal year 1956.

Conducted annually throughout the United States at all teaching naval hospitals, the program affords unusually interesting and informative training for the medical student and future Reserve medical officer during his vacation from medical school. Eligible and selected applicants may be issued orders for this training any time during fiscal year 1956.

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From the Note Book

1 On and after July 1, 1955, a physical examination will not be required in the case of applicants 40 years of age and under for membership in the Navy Mutual Aid Association. New application blanks now being distributed carry this information but many blanks previously mailed to Nonresident Directors bear instructions which are not now applicable.

The Association is having a record breaking year and has received 1229 new applications for membership so far during 1955--over 80% ahead of last year at this time. (Navy Mutual Aid Association)

2 Retirements: CAPT E. C. Aulls, MC USN, CAPT R. Bates, MC USN, CAPT R. A. Bell, MC USN, CAPT H. Hirshland, MC USN, CAPT C. J. Stuart, MC USN, CAPT F. G. Ulen, DC USN, CAPT D. O. Wissenger, MC USN, LCDR D. E. Billman, MC USN, LCDR J. A. Mitchell, DC USN, LT C. E. Curtis, MSC USN, LT W. D. Edgerton, MC USN, LT J. W. Parsons, MSC USN, LT C. P. Richardson, MSC USN, and CWO A. Lawrence, HC USN.

3 "Death is a Five-Letter Word." The State of Connecticut keeps drivers alert with traffic towers manned by State Police, radar speed checks, and

thought-provoking safety slogans posted prominently along Connecticut highways. One of these is: "Death is a Five-Letter Word - So Is Speed; Life is a Four-Letter Word, - So Is Slow."

4 A recent publication, "Origins of Resistance to Toxic Agents," contains the proceedings of the symposium on drug resistance sponsored jointly by the Office of Naval Research and the University of Pennsylvania. The Proceedings was edited by Dr. M.G. Sevag, an ONR contractor from the University of Pennsylvania; Dr. Roger D. Reid; and Dr. Orr E. Reynolds of ONR.

The book, published by Academic Press, New York, contains the papers presented by the various speakers and the discussions which followed the various sessions. Topics include: resistance to microbes; resistance to herbicides and insecticides; tolerance and addiction to drugs and alcoholism; resistance factors, infections agents, and cancer cells; physiological, chemical and genetic viewpoints.

5 Dental Materials: Specification and Certification is a film produced by National Bureau of Standards in cooperation with the American Dental Association, and is intended to aid the dentist in a better understanding of the Certification Program of the American Dental Association. (NBS)

6 A recent method of cyclodiathermy involving 8 to 12 applications of the electrode, placed 6 mm. or more back of the limbus for 10 seconds at each site, has proved to be a safe operative procedure in a series of 38 eyes. The authors believe that the operation is indicated in primary glaucoma when other, more conventional operations have failed or are considered hazardous; or in secondary glaucoma if operation cannot be avoided. (Arch. Ophthal., June 1955; H.G. Scheie, M.D., W.C. Frayer, M.D., R.W. Spencer, M.D.)

7 Primary tumors of the heart are rare. Tumors of the heart have been classified as either metastatic or primary. Primary cardiac tumors may be classified histologically or by location. Clinical features depend on whether the tumor is largely within the cardiac chambers or involves the myocardium or pericardium. (Circulation, June 1955; H.P. Goldberg, M.D., I. Steinberg, M.D.)

8 Experimental evidence is presented that pathogenic fungi are readily shed from the feet of many individuals with and without clinically active fungus disease of the feet. Persons clinically free from fungus disease of the feet often--perhaps usually-- harbor pathogenic fungi on their feet even if they cannot be detected in one or more careful clinical and mycologic examinations. (Am. J. Pub. Health, June 1955; R.L. Baer, M.D., S.A. Rosenthal, Ph. D., H. Rogachefsky, M.D., J.Z. Litt, M.D.)

9 Diffuse bilateral pulmonary disease frequently presents a difficult diagnostic problem. A simple ingenious technique for obtaining a representative specimen of lung tissue for histologic study, under direct visualization through a small incision, has been devised by Klassen and his group. This report summarizes the authors' experience in 50 patients. (Dis. Chest, June 1955; P. A. Theodos, M.D., F.R. Allbritten, Jr., M.D., R. L. Breckenridge, M.D.)

10 Leprosy in the U.S. is a definite, though not a great public health problem. The disease may occur in, and be transmitted in, any section of the country although a large proportion of recognized cases have occurred in persons of foreign birth, a majority occurred in natives of the U.S. and was contracted in the U.S. (Pub. Health Rep., P.H.S., June 1955; L. F. Badger, M.D.)

11 At the end of April 1955, there were 55 civilian physicians reported as working at 26 naval industrial activities providing care for civilian employees. This has been an accelerative program during the 1955 fiscal year. As a result of the program, Medical Corps officers have been released for other duty. (Medical Statistics Division, 9 June 1955)

12 An evaluation of renal function in infancy and childhood is presented in Am. J. of Med. Sc., June 1955; W.B. Weil, Jr., M.D.

13 The role of the articular ligament in tennis elbow is discussed in J. Bone & Joint Surg., June 1955; D.M. Bosworth, M.D.

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Short Course In Aviation Medicine

The School of Medicine and Medical Extension of the University of California Medical Center at Los Angeles, California, is offering a three-day course in aviation medicine in October of this year. The Course will include lectures and demonstrations in cardiology, ophthalmology, otolaryngology, physiology, and psychiatry as they pertain to Aviation Medicine. A field trip through one of the local aircraft plants will be scheduled and should prove of interest to those attending the course.

More specific details and convening dates may be obtained by addressing inquiries to Bruce V. Leamer, M.D., School of Medicine, University of California Medical Center, Los Angeles 24, Calif. (AvMedDiv, BuMed)

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Certifications

American Board of Pediatrics

LT Truett C. Boles (MC) USNR

American Board of Preventive Medicine

CAPT Edward A. Anderson (MC) USN

CAPT Lynn S. Beals, Jr. (MC) USN

CAPT James E. Fulghum (MC) USN

American Board of Radiology

CAPT George H. Davis (MC) USN

American College of Physicians

CDR Edward J. Jaruszewski (MC) USN

American College of Surgeons

CDR Sidney L. Arje (MC) USN

CDR Rudolph P. Nadbath (MC) USN

CDR Nelse O. Olson (MC) USN

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Recent Research Projects

Naval Medical Research Institute, NNMC, Bethesda, Md.

- 1 A Study of Total Body Water in Rats and in Mice. NM 007 081.16.03, 7 December 1954.
- 2 A Review of the Literature on Susceptibility of Mosquitoes to Avian Malaria. NM 005 048.01.10, 17 December 1954.
- 3 Report of a Shipboard Enteric Pathogen Survey. Memorandum Report 54-13; NM 005 048.04, 22 December 1954.
- 4 The Effect of Ipral Sodium Upon Link Trainer Performance. NM 001 056.06.03, 22 December 1954.
- 5 Summaries of Research. 1 July - 31 December 1954.
- 6 The Development of an Apparatus for Cutting Tooth Structure by Means of Ultrasonic Vibrations. Research Progress Report. NM 008 015.08, 31 December 1954.

Naval Medical Research Unit No. 3, Cairo, Egypt

- 1 New Definitive Hosts from Egypt for Trematodes of the Genus Heterophyes. NM 005 050, 51.03.

- 2 New Fish Hosts for Trematodes of the Genus Heterophyes in Egypt. NM 005 050.51.04.
- 3 Observations on the Pathology of Tuberculous Meningitis in Egyptian Children (Including Clinical Correlation and Complications) NM 007 082.23.01.
- 4 The Ixodes Ticks of Chiroptera (Ixodoidea, Ixodidae). NM 005 050.29.23.

Naval Medical Research Unit No. 4, Great Lakes, Ill.

- 1 Antigenic Studies on Influenza C Viruses Isolated from Navy Recruits During the Winter of 1953 - 1954. NM 005 051.06.06, 15 January 1955.
- 2 Incidence of Sulfonamide Resistant Streptococcal Strains Isolated Over a Six Year Period Employing a Dehydrated Form of Wilson's SR Medium. NM 005 051.14.15, 12 April 1955.
- 3 Purification of Influenza Virus B/GL/1/54. NM 005 051.14.16, 12 April 1955.

Naval Dental Research Facility, Great Lakes, Ill.

- 1 The Formation of Lactic Acid in Dental Plaques. I Caries - Active Individuals. NM 008 013.06.08, January 1955.
- 2 The Relationship of Blood Catalase Activity and Periodontal Disease. NM 008 013.13.02, March 1955.
- 3 The pH and Lactate Content of Caries-Immune Plaques. NM 008 013.06.09, March 1955.

Naval Air Development Center, Johnsville, Pa.

- 1 Measurements to Evaluate the Effectiveness of the Full Pressure Half Suit in Applying External Pressure to the Body. NM 001 060.06.01, 21 March 1955.

Medical Research Laboratory, Submarine Base, New London, Conn.

- 1 Evaluation of Waterless Handcleaner SBS - 30. Submitted by Sugar Products Corporation. Memo Report 55-2-NM 002 015.14.01, 20 May 1955.

Naval Dental Clinic, Camp Pendleton, Calif.

- 1 Comparison of Balanced and non-Balanced Occlusion of Artificial Dentures. Research Progress Report NavMed 1343 for Project NM 008 023.01, 2 May 1955.

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BUMED INSTRUCTION 5360.16

4 June 1955

From: Chief, Bureau of Medicine and Surgery
Commandant of the Marine Corps
To: All Continental Activities
Subj: Remains, casket, and shipping case; inspection of
Ref: (a) Chapter 17, ManMedDept
Encl: (1) Inspection Check List

This Instruction establishes a comprehensive inspection program where remains are prepared and encased under supervision of a naval activity, to assign implementing responsibilities, and to define procedures therefor.

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BUMED INSTRUCTION 1510.2A

8 June 1955

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Dental Personnel Regularly Assigned
Subj: Specialized and advanced courses of instruction available for Group XI, dental enlisted rates
Ref: (a) Catalog of Dental Technician Schools and Courses, NavMed P-5029 (Revised)

This Instruction furnishes naval activities with information regarding specialized and advanced courses of instruction available to dental enlisted personnel. It may be considered to be a supplement to reference (a).

BuMed Instructions 1510.2 and 1510.3 are canceled.

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BUMED INSTRUCTION 1510.6

9 June 1955

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations
Subj: General Dental Technician Schools, Class "A"

This Instruction promulgates information concerning Class "A" general dental technician schools--their location, the length and frequency of course, eligibility requirements, and application procedures.

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BUMED INSTRUCTION 6320.19

16 June 1955

From: Chief, Bureau of Medicine and Surgery

To: All Naval Hospitals and Stations Having Infirmaries

Subj: Report of Treatment Furnished Pay Patients, Hospitalization
Furnished (Part A), DD Form 7; reporting requirement for

Encl: (1) Table of Reporting Procedures Concerning Medical Services
Furnished Certain Categories of Supernumerary Pay Patients

This Instruction establishes a uniform method of reporting for reimbursement-billing purposes inpatient medical care furnished pay patients, when such care is authorized.

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PREVENTIVE MEDICINE SECTION

Heat Stress: A Navy Medical Problem

Despite the fact that heat diseases are largely preventable, the incidence of heat exhaustion (prostration) and heat stroke (sunstroke) in Navy and Marine Corps personnel has shown little decline since World War II. Of these two conditions, heat exhaustion stands first in incidence and sick days. Heat stroke, with a mean yearly incidence of less than one-tenth that of heat exhaustion, is foremost among heat diseases as a cause of death. Six deaths from heat stroke occurred in Marine Corps trainees in the 3-year period 1951 - 1953. Heat cramps is of minor importance with low morbidity and no mortality. Heat rash, though rarely appearing on the sick list, is probably the most prevalent form of heat disease in Navy and Marine Corps personnel living and working in hot environments. Subclinical forms of heat stress are not easily measured but manifest themselves as inferior performance and poor morale.

Heat stress will be discussed under two headings: (1) Clinical Aspects of Heat Illness; and (2) The Epidemiology and Prevention of Heat Illness. The second section will appear in a subsequent issue of the News Letter.

1 Clinical Aspects of Heat Illness

In military populations, the constant influx of untrained unacclimatized personnel maintains a group susceptible to risk of heat illness. In time of war, mass movements of military units to tropic or desert climates may expose even trained personnel to intolerable degrees of heat stress.

Heat Cramps. Heat cramps occur in an actively sweating person who drinks water without simultaneously replacing salt lost in the sweat. Blood analysis reveals hypochloremia. Salt is absent in the urine. The principal symptom is painful contraction of skeletal muscles. Heat cramps may occur as an isolated syndrome or in conjunction with heat exhaustion.

Ingestion of salt, either as cellulose impregnated tablets (10 grains), as a 0.1% solution in drinking water, or as extra salt added to the food, is an effective preventive measure. Under extreme conditions, as much as 15 grams of extra salt per day may be needed to compensate for salt lost in the sweat.

Heat Exhaustion. Heat exhaustion is an accepted clinical diagnosis. However, from the standpoint of pathogenesis, heat exhaustion is not one but several entities. Exhaustion or collapse in the heat can occur from work alone in the absence of dehydration or salt deficiency. Nevertheless, in most cases seen in unacclimatized recruits in training, water and salt deficiency are present to some degree and may be primarily responsible for the clinical picture.

Characteristic signs and symptoms of this type of heat exhaustion are profuse sweating, tingling sensations, pallor, dyspnea, and palpitations, associated with gastrointestinal symptoms of anorexia, and occasionally, nausea and vomiting. Neuromuscular disturbances with trembling, weakness, and incoordination coupled with cerebral signs ranging from slight clouding of the sensorium to actual loss of consciousness complete the picture. Physical examination reveals a mild to severe circulatory collapse with a pale, moist, cool skin and a rapid thready pulse. Systolic blood pressure may be normal, but the pulse pressure is usually decreased. Mouth temperature is normal or below. Rectal temperature is normal or somewhat elevated.

Treatment requires rest in a cool place with oral administration of cool salted water (.2% - .4%), or intravenous 5% glucose in saline in case vomiting or unconsciousness precludes oral fluids. Recovery is usually prompt, but immediate return to duty is inadvisable except in the mildest cases.

A familiar form of heat illness is one related primarily neither to salt and water deficiency nor to excessive work. This is the type of

collapse typically seen in troops standing in parade formation in hot outdoor climates. It is more akin to syncope and results from pooling of blood in dependent parts and dilated skin vessels. The disparity between vascular capacity and circulating blood volume leads to cerebral ischemia. Vagotonia may be a contributing factor.

Lastly, there is the so-called anhidrotic form of heat exhaustion resulting from pre-existing skin trauma, usually heat rash or sunburn, which interferes with sweat secretion. The subject notices progressive heat intolerance with impairment or absence of sweating. Salt and water deficiency are not prominent. Physical examination reveals a warm, dry skin and an elevated deep temperature, sometimes to 104° - 106° F. There is exhaustion but usually no disturbance of consciousness. A few cases are said to develop true heat stroke. Treatment demands prompt removal to a cool environment. Skin disorders must be treated to restore normal sweating. Until then, exposure to heat should be avoided.

Heat Stroke. Heat exhaustion may be regarded as the end result of heat-balance mechanisms which are overactive but still functioning. In heat stroke the machinery of heat regulation itself is broken down and the main avenue of heat loss, by evaporation of sweat, is blocked.

There may be premonitory symptoms of headache, malaise, feeling of excessive heat, on the one hand, or the general picture of heat exhaustion on the other. The onset is usually abrupt with sudden loss of consciousness, convulsions, or delirium. Sweating is absent in the typical case, and a history frequently reveals that this was noted by the patient himself some time prior to onset of symptoms. Since water intake continues in the absence of sweating, superhydration rather than dehydration may exist. This is manifested by diuresis which is an added signal of impending disaster.

Physical examination of the stricken patient reveals the skin to be hot, dry, and red, with petechiae in severe cases. Deep body temperature is invariably high, usually in excess of 106° F. A temperature exceeding 108°F. is not uncommon and spells a poor prognosis.

In treatment, time is of the essence. Not only is the body unable to rid itself of the heat it gains from the environment but the hyperthermia accelerates metabolic heat production, causing the body temperature to spiral upward at an ever-increasing rate. The victim should be removed with utmost dispatch from the sun to a cool, shady environment. The principal methods of cooling are by convection and evaporation. One means of reducing hyperthermia is to wrap the victim in wet sheets and to ventilate the body by vigorous fanning. A more drastic procedure is to place him in a tub of water chilled with ice. This requires massage of the body surface to keep blood flowing to the skin where it can discharge its heat load. Body temperature must be checked frequently to prevent overcooling. In a word,

the therapist must take over the function of regulating the temperature of the patient until the latter's own functions have recovered. Relapses are common, and consequently, continuous observation is essential. Fluids are administered as necessary but not to excess. A trained heat-stroke team, able to administer emergency treatment at a moment's notice, can do much to reduce mortality from heat stroke at training stations in hot climates.

Heat Rash. The clinical picture of heat rash, or miliaria rubra, is too well known to require description. Its importance lies in its high prevalence with lost time and loss of efficiency in military populations working and living in hot climates or in hot spaces aboard ship. Sleeping is interfered with, leading to cumulative effects of fatigue which predisposes the heat-rash victim to heat exhaustion. Impaired sweating from the skin disease is an additional predisposing factor.

Treatment is effective only if the skin can be kept dry for part of the day at least. Sleeping in cooled quarters will remedy the situation and will permit men to work in hot, humid conditions without developing heat rash. (David Minard, LCDR MC USN, PrevMedDiv, BuMed)

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Communicable Disease Control

Poliomyelitis: Preventive Medicine Aspects

(The etiology, epidemiology, pathogenesis, pathology, and clinical features of poliomyelitis were discussed in the Preventive Medicine Section of the 27 May and 10 June 1955 issues of the Medical News Letter. The discussion of the disease is concluded in this issue with consideration of the preventive medicine aspects. The review was prepared by members of the Commission on Viral Infections of the Armed Forces Epidemiological Board as a revision of Army Technical Bulletin Medical No. 193, "Poliomyelitis." Editorial changes have been made in adopting it for publication in the U.S. Navy Medical News Letter. The final section of the review, "Active Immunization," has been omitted because the manuscript was prepared before 12 April 1955, when the Poliomyelitis Vaccine Evaluation Center announced the efficacy of the Salk vaccine.)

General Precautions.

(ED: In handling patients with acute poliomyelitis, it should always be remembered that one is dealing with a highly infectious disease. The relative infrequency of cross infections in other patients and hospital

attendants has led some to minimize the importance of precautions in hospitals. This infrequency, however, is due more probably to the high percentage of adults who are immune and to the high ratio of inapparent infection to clinical disease, rather than to any absence of infectiousness of the disease.

Throat discharges and feces contain virus and are infectious. The virus persists in throat discharges for a relatively short time, probably not more than 3 weeks, but may persist in the feces for several months. Isolation and disinfection precautions should be based on these facts. Rarely is it practical to maintain a patient in isolation for more than 2 or 3 weeks. In the early part of the course, throat discharges and feces should be disposed of as quickly and safely as possible. Chlorination is ineffective in rendering these excreta noninfectious and should not be depended on. Soiled articles should be promptly disinfected by heat.

Careful personal hygiene on the part of attendants and visitors is equally important and all should be warned particularly to avoid possible hand-to-mouth transmission of infectious material from contaminated articles or surfaces.

In the home, while hygienic and sanitary precautions should be maintained, other members of the family have ordinarily contracted the disease by the time the patient becomes recognizably ill. Therefore, if hygienic measures are applied only to the patient, a member of the family with an inapparent infection may be more dangerous to others than is the patient himself. All members of the family unit should be warned of their potential danger to others, instructed in personal hygiene, and informed of the advisability of avoiding to whatever degree possible intimate contacts with persons outside the family, particularly children, for a period of several weeks.)

Inasmuch as inapparent infections are so much more common than frank cases, isolation and quarantine measures have not been effective in controlling the spread of the disease within a large community. However, since poliomyelitis is a contagious disease, it is recommended that diagnosed cases be isolated for 1 to 2 weeks and that a search be made for cases among their contacts with a view to early diagnosis and reporting. Severely paralytic cases seem to excrete more virus than others and, for this and other reasons, are more dangerous as a source of infection than are the mild cases. Parental restriction of intimate childhood contacts is advisable. During epidemic times, children and pregnant women should be protected so far as possible from unnecessary contact outside the home, especially with other family groups; tonsillectomies and immunizations should be postponed, and overexertion and fatigue avoided in the presence of mild illness. Individuals with mild fever and nonspecific symptoms should be regarded with extra suspicion, and kept in bed until the symptoms subside.

Immunity. Extensive experiments in chimpanzees fed live virus, indicate that infection with one type of poliomyelitis virus confers immunity to that type but not to the other two. Well documented second attacks of paralytic poliomyelitis have been described in humans, and are presumably due to heterotypic infections. Neutralizing antibodies appear early in the course of infection, often before the onset of symptoms of the major illness; they apparently remain for life. Complement fixing antibodies are more transient, being no longer detectable several years after infection. Infection with one type sometimes causes transient heterotypic rises in both neutralizing and complement-fixing antibodies.

Passive Immunization. Gamma globulin in adequate dosage is effective under controlled experimental conditions in the laboratory. Its usefulness in familial contacts of cases is limited because, by the time a case is diagnosed, most other susceptible members of the family have already been infected, and it probably is less effective or requires larger doses during the latter part of the incubation period. Nevertheless, its use in highly exposed groups (e. g., in camp outbreaks), or in neighborhood contacts with limited and known exposure, may be warranted. The usual dose tested in children under experimental conditions and found to be effective was 0.14 cc per pound. Duration of measurable protection by this dosage was shown to be 5 to 8 weeks. Larger doses would probably give more complete and larger protection.

(ED: BuMed Instruction 6230.6 Sup 1 of 26 October 1954, contains the latest recommendations of the Executive Committee of the Association of State and Territorial Health Officers concerning administration to family and group contacts and includes a recommendation that the dosage be increased to 0.2 cc per pound of body weight.)

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Industrial Medicine

Potential Toxicity of Methyl Chloroform

Inhibited methyl chloroform (1, 1, 1, trichloroethane) is being increasingly employed as a substitute for carbon tetrachloride in metal cleaning operations. It has been noted that this solvent is currently being used in a manner potentially hazardous to health. Inhibited methyl chloroform, a chlorinated hydrocarbon, plus an inhibiting agent, is available under many proprietary names, e. g., Chlorothene, Penolene 643, Inhibisol. Although it is one of the least toxic of the chlorinated solvents, it is by no means entirely harmless. The threshold limit in air for prolonged exposures

is 500 parts per million, as compared to 25 for carbon tetrachloride. Under conditions of poor ventilation, vapors of this solvent may exert a strong narcotic effect and may lead to a loss of consciousness. Repeated severe exposures may permanently damage some body organs. The following health precautions **MUST BE OBSERVED** if this solvent is to be used safely:

- a Supplied air respirators must be worn by personnel using this solvent in confined spaces such as "hell-holes" or cockpits.
- b Chemical cartridge respirators must be worn by personnel spraying this solvent under conditions of poor ventilation other than in confined spaces.
- c Under conditions of very good area ventilation, compressed air blow-off may be conducted without respiratory protection provided that the solvent laden air is directed away from nearby workers. Gloves must be worn during the air blow-off of this solvent in order to prevent impingement of it on the skin and to prevent skin irritation.
- d Methyl chloroform should be kept in covered containers in order to minimize area contamination by evaporation and to conserve the solvent. (Industrial Health Report for January 1955, Naval Air Station, Alameda, Calif.)

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Certification of Specialists in Occupational Medicine

Eligibility Requirements for Examination. Each applicant for certification in occupational medicine by the American Board of Preventive Medicine is required to meet certain eligibility requirements and to pass an examination. A brief outline of requirements follows:

General Requirements.

- 1 Good moral character and high ethical and professional standing;
- 2 Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or from a foreign school satisfactory to the Board;
- 3 An internship of at least one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association or in a foreign hospital satisfactory to the Board; and
- 4 Licensure to practice medicine in the United States or in the Dominion of Canada.

Special Requirements in Occupational Medicine

- I (a) Successful completion (after internship) of at least two academic years of graduate study in preventive and occupational medicine in a school of medicine, or a school of public health (The schools in which such instruction is provided shall be accredited for graduate study by the Council on

Medical Education and Hospitals of the American Medical Association or by the American Public Health Association, in accordance with the jurisdictions of these accrediting agencies); or (b) Training and study deemed by the Board to be substantially equivalent to such graduate study.

2 (a) In addition to the requirements in (1) above, completion (after internship) of not less than one year of supervised experience (residency) in occupational medical practice in an industrial or medical organization (This residency shall provide planned instruction, observation, and active participation in a comprehensive program of occupational medicine); or (b) A comparable period of experience deemed by the Board to be substantially equivalent to a year of supervised experience as specified in (a).

3 - In addition to the requirements in (1) and (2) above, a period (after internship) of not less than 3 years of special training in, or teaching or practice of, occupational medicine.

Certification in Occupational Medicine Without Examination (The Founders Group)

The bylaws authorize the Board, for a limited period of time, to excuse from examination specialists in occupational medicine who have attained high academic rank in an approved medical school or an accredited school of public health or professional position, or who by reason of distinguished achievement in the field of occupational medicine are recognized leaders, or who have had a minimum of 10 years of distinguished service in the field of occupational medicine and are considered eligible by the Board whether or not they meet the eligibility requirements previously referred to. Applications for consideration as members of the Founders Group must be received not later than July 1, 1956. The application fee must accompany the application (\$15.00), and the examination fee (\$75.00) is payable before certification, even though the applicant be excused from examination. (See BuMedInst. 1500.4A)

Examinations. Examinations will be held from time to time and in various places depending upon need as indicated by applications received. Examinations will ordinarily be held in connection with the annual meetings of one or more of the sponsoring societies and may also be held at other times and at other places so located geographically as to minimize travel for the applicants. The examination consists of three parts: Part I consists of a comprehensive written examination designed to test the knowledge of the applicant in the general field of preventive medicine. Part II is a comprehensive written examination designed to test the knowledge of the applicant in the special field in which he requests certification. Part III is an oral or practical examination which will usually be held at the completion of the written examinations. An endeavor will be made to

adapt the details of the oral or practical examination to each candidate's experience and practice. (The Bulletin of the American Board of Preventive Medicine, Inc., on Certification of Specialists in Public Health, Aviation Medicine, and Occupational Medicine, 1955, Fourth Edition)

(Note: This information should not be construed as a solicitation of applications for certification in the field of occupational medicine, but rather as a means of assisting the naval industrial medical officers who may be eligible, or believe they are eligible, for certification. These officers may apply for examination for certification in occupational medicine. They are required to apply, via official channels, to the Bureau of Medicine and Surgery for evaluation of their formal training and experience in accordance with BuMedInst.. 1500. 4A. Officers who consider themselves eligible for certification in the Founders Group shall follow the same procedure as that noted above.)

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